The Spanish Emergency Military Unit (*Unidad Militar de Emergencias*). The Goverment's special emergency tool

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The Spanish Emergency Military Unit

Introduction

This article is intended to provide an overview of the Spanish Emergency Military Unit, or *Unidad Militar de Emergencias* (UME according to its Spanish abbreviation), from its inception, its structure, its response capabilities, and its most recent involvement in combating the COVID-19 pandemic and its action following Storm Filomena. Its primary missions and tasks are also described.

Inception and Formation

The increase in the frequency and severity of natural disasters due to global warming and responses to emergencies and catastrophes are a worldwide concern. Different countries have embraced a range of different solutions aimed at bringing available resources to bear against the most likely hazards, though in all cases with the shared intent of seeing to the safety and wellbeing of their citizens. Involving the Armed Forces in aiding populations struck by natural disasters goes back to the very origins of the military. The organisation and hierarchical structure of the military makes it an ideal instrument to be used in an emergency. For that reason, certain countries, one of them Spain, have decided to form military units that specialise in dealing with disasters.

Figure 1. Fifteenth UME Anniversary Celebration (7 October 2020). Source: UME website.

Since its first response in 2007, the UME has been called on more than 570 times, chiefly to deal with **forest fires** (404 times), followed by **floods and rescues** (57), **winter storms** (35), **technology hazards** (37), **foreign missions** (17), and "miscellaneous" operations (20). Its most protracted response was required to **combat the pandemic** in 2020, primarily Operation "BALMIS".

The UME has responded in six **earthquakes**, two in Spain in Lorca (2011) and Melilla (2016) and four overseas in Haiti (2010), Nepal (2015), Ecuador (2016), and Mexico (2017). In addition, the UME was also deployed to the island of El Hierro during the underwater volcanic eruption in 2011. It has deployed abroad to fight forest fires in Chile (2017), Portugal (2017, 2018, and 2019) and Greece (2018 and 2019). It has also played a very active role within the UN's mission in Lebanon (UNIFIL), training emergency response personnel.

Civil defence in Spain is a public service that protects people and property intended to ensure a suitable response to the different types of emergencies and calamities from natural causes or human activities, whether accidental or intentional. Emergencies confined to the level of Spain's Regions are dealt with by the Autonomous Regions themselves. However, the national government bears responsibility for handling catastrophic events that are declared to be "national emergencies". The UME therefore arose as an instrument in the service of the national government to deal with situations of this kind.

The UME was formed on 7 October 2005 to enhance the national government's capacity to respond to this kind of emergency. The Unit was created to be the mechanism of first resort within the Armed Forces to fall back on when taking action to see to the safety and wellbeing of the country's citizens who are in grave danger and to respond to national disasters and calamities and other public needs. It is designed for flexible, rapid response, with specialised personnel and equipment to each hazard that has been identified. Still, cooperation with the rest of the Armed Forces is essential in operations which are protracted in time or require outside resources.

Figure 2. Fighting a forest fire.
Source: UME website.

The organic affiliation of the UME has changed over the course of its short history, and it is now under the direct command of the Minister of Defence. According to Spain's National Defence Act currently in force, its mission is to contribute militarily to the action taken by the government in national emergencies or as a special asset that can be called on in support of Spain's Regions and Cities, a task that falls on the Armed Forces as a whole.

That is, the UME is a permanent joint force whose mission is to take action anywhere inside or outside the territory of Spain to cooperate with the institutions of the government and its administrative bodies in the interest of the safety and wellbeing of its citizenry in situations of grave risk, disasters, calamities, and other public needs[1].

(1) Spanish Organic Law 5/2005 of 17 November 2005 on National Defence [Ley Orgánica 5/2005, de 17 de noviembre, de la Defensa Nacional].

One of the most important provisions of law concerned is Spanish Royal Decree [Real Decreto] 1097/2011 of 22 July 2011 on the Action Protocol for the UME [*Protocolo de intervención de la UME*], which lays down the conditions for it to act in serious emergencies resulting from natural hazards such as floods, river overflows, earthquakes, landslides, heavy snowfalls, and other severe adverse weather conditions; forest fires; technology hazards like chemical, biological, radiological and nuclear (CBRN) events; terrorist attacks or unlawful acts of violence, including those directed at critical infrastructure, hazardous installations, or carried out using CBRN agents; environmental contamination; and in any other situations at the discretion of the Prime Minister of Spain.

Organization of the UME

The UME consists of some 3,500 military personnel specially trained to be able to carry out their missions successfully. The components of its organic structure are: The Headquarters (CG; Spanish abbreviations are used throughout), the Headquarters Unit (UCG), the Military Emergency School (EMES), the Emergency Response and Support Regiment (RAIEM); the Signal Battalion (BTUME), and the First Emergency Response Battalion (BIEM I), all based in Torrejón de Ardoz (Madrid); the Second Emergency Response Battalion (BIEM II), based in Seville, and its subordinate, the Canary Island Emergency Response Contingent (Grand Canary and Tenerife Islands); the Third Emergency Response Battalion (BIEM III) in Valencia; the Fourth Emergency Response Battalion (BIEM IV) in Zaragoza; and the Fifth Emergency Response Battalion (BIEM V) in León.

The guiding concept underpinning UME deployment is for it to be capable of reaching any place within the territory of the mainland in less than four hours by land so as to ensure the rapid reaction required in emergencies.

The main mission of the UME's Headquarters is to advise and assist the UME's Commanding General (GEJUME) in exercising his command. It consists of the General Staff, the Evaluation and Relations Department, the Economic Affairs Section, and the Legal and Technical Advisory Service.

The Military Emergency School was established as Military Training Centre by Ministry of Defence Decree [*Orden*] DEF/85/2017 and serves as the cornerstone for training in the UME. It is responsible for ongoing training in how to handle emergencies.

The UME's Signal Battalion (BTUME) is responsible for providing the UME's Command and Headquarters with the information, telecommunications, supervisory, and command capabilities needed to manage and direct the operations the UME is assigned.

The Response Units (RAIEM, BIEM, and BTUME) all have their own Staffs and Commands, Staff and Service Companies, as well as, respectively:

The Emergency Response and Support Regiment (RAIEM) is the unit that gives the UME its logistical support, affected personnel support, and environmental and technology (CBRN) emergency response capacities. That is, emergency logistical support for both responders and victims and for the emergency action to deal with events caused by CBRN or environmental hazards.

The Emergency Response Battalions (BIEMs) are the UME's building blocks that enable it to perform its assigned missions in the areas within their purview. Each battalion is primed to respond in all situations in which the UME is called into action and is prepared to handle all manner of situations in which people's lives or the safety of property, the environment, natural spaces and their resources, or the country's artistic and historical heritage are potentially at risk, all based on the Unit's Action Protocol.

The UME is also in command of operations of seaplanes with Air Force Group 43 and light and medium helicopters with Army Emergency Helicopter Battalion II (BHELEME II). Aerial teams are extremely high-value for fighting forest fires and for rescue missions during floods.

Emergency Operations Command (DOE)

In case of declared national emergencies in which the UME is ordered to take action, operational civil defence action in the disaster area is directed and coordinated by the UME Commander under the Ministry of the Interior.

In these circumstances the UME is responsible for coordinating the entire organisation set up to handle the emergency, ordinarily involving local, regional, and national government resources, public as well as private. The operational organisation and command system are capable of overseeing the efforts of up to 35,000 team members.

With this in mind, each year the UME organises a Combined Joint Exercise, running drills to practice the operational management of national emergencies with the participation of the various agencies and institutions that exist to handle emergencies, including those from other countries with which Spain has bilateral cooperative agreements or in its role as a member of international organisations (the EU, the UN, NATO). It is held in a different Spanish Region each year to gain a working knowledge of the particular factors and special aspects local to each and of how to deal with the most likely local hazards.

The Commanding General of the UME (GEJUME) is in charge of operational supervision of the emergency from his Permanent Command Post at the Joint Operations Centre (JOC) at the UME's Headquarters. To be able to perform this function effectively, an Integrated Operations Command Post (MOPI) is deployed in the vicinity of the area where the catastrophe has occurred under the command of the Deputy Commander of the UME (SEJUME) to address needs on the ground.

The Evaluation and Testing Section is an essential component responsible for setting up an exercise monitoring system, comprising a series of associated incidents and events aimed at simulating the conditions that could arise in a disaster and implementing the operational and coordination procedures to be tested and refined. This Section also systematically evaluates the UME's various operational units for different hazards on a routine basis to ensure a high state of operational and safety readiness.

Capacity Modules

Capacity modules are either "distributed" or "centralised". Distributed capacities are the capabilities of each response battalion that enable them to tackle the most common hazards, e.g., forest fires, severe winter storms, floods and other adverse weather events, volcanic eruptions, earthquakes, and support for the civilian population affected. Centralised capacities are highly specific, specialised capacities available in certain units only, e.g., search and rescue operations in complicated situations such as earthquakes, blizzards, confined spaces, or underwater caves; deployment of telecommunications and command and control systems during disasters; technology hazards and environmental contamination; housing and camps for victims; protection of the cultural heritage; fluid management systems (SIGEFLU); drone operations (RPAS); semi-permanent bridges; mortuary services for victims, etc.

Time is a critical factor in emergency situations, and the capacities need to be ready for deployment and use in the shortest possible time. The UME is in a state of permanent preparedness and has a system in place that enables all its personnel to be brought in stages in a very short span of time. Rapid deployment personnel, known as first intervention, are on permanent duty at the UME's bases. There is an advance reconnaissance group that maintains readiness to deploy in less than 15 minutes, while the rest of the first response force must be ready for deployment in under an hour.

This is followed by the back-up action force immediately behind, ready for deployment in less than two and a half hours. All other UME personnel are to be ready for deployment in under six hours.

Actions by the UME are based on three fundamental principles: planning, training, and deployment. For events that are handled at a regional level, tactical groups act together as a single unit under the natural command structure and are placed at the disposal of the emergency manager.

Figure 3. Search and rescue (USAR).
Source: UME website.

Two of the capacity modules deserve special mention, namely, Urban Search and Rescue (USAR, this abbreviation from the English) and the Environmental and Technology Emergency Response Group (GIETMA).

The first time the UME was deployed outside the borders of Spain was in Haiti after the fateful earthquake that struck on 12 January 2010. That experience led the UME to have its Urban Search and Rescue teams classified by INSARAG (International Search and Rescue Advisory Group) as conforming to UN standards and thus becoming an asset it can turn to within its humanitarian aid network. One of the UME's Urban Search and Rescue teams successfully completed the classification process in November 2011 and was classified by UN international evaluators.

The UME achieved full operational capacity for natural hazards in 2009. By contrast, it did not have the capacity to handle accidents relating to the manufacture, transport, storage, and use of toxic substances or contaminant spills or leaks produced by natural disasters or other causes or to minimise the environmental impact of certain invasive species.

It was therefore decided to undertake a project to build its capacities against these hazards through the creation of an Environmental and Technology Emergency Response Group (GIETMA), which gained full operational status in 2014.

This involved developing a series of interrelated capacities: a Light Reconnaissance Vehicle (VELIRE) capacity for scouting; a Rapid Response Laboratory (LABIR) to analyse samples; a Tactical Response Vehicle (VINTAC) capacity for operations; a decontamination capability for personnel, vehicles and sensitive equipment; a Contaminated Water Treatment Plant (ETAC) and protective environmental contamination equipment, e.g., containment barriers for spills on water.

More specifically, these capacities involve limited remote chemical point detection and biological point detection; provisional and confirmed identification of biological agents and chemical substances; CBRN sampling; remote and point radiation detection and identification; industrial accident response; CBRN mass and operational personnel decontamination; decontamination of material (vehicles) and sensitive equipment; contaminated water treatment; hydrocarbon containment and removal; and control and mitigation of the environmental effects of invasive species.

One of its first actions was Operation "CHILOECHES" in late August 2016 in response to an industrial fire at a toxic waste treatment and recycling plant in Guadalajara. The main risk was potential environmental contamination of the Henares River, which in the end was successfully averted.

Operations

Within Spain, the UME is ordinarily called on to respond at the request of one of Spain's Regions or Cities whose own capabilities have been overburdened, making special outside assistance necessary. The request is sent through the corresponding National Government Representative's Office to the Ministry of the Interior's Civil Defence and Emergency Agency (DGPCYE), and from there it is routed to the Ministry of Defence, i.e., to the Office of the General Director of Defence Policy (DIGENPOL), which places the UME on active status. The UME may request support from the Army, Air Force, and Navy depending on the nature of the emergency.

Since its first response in 2007, the UME has been called on more than 570 times, chiefly to deal with forest fires (404 times), followed by floods and rescues (57), winter storms (35), technology hazards (37), foreign missions (17), and "miscellaneous" operations (20). Its most protracted response was required to combat the pandemic in 2020, primarily Operation "BALMIS".

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Some of the actions in which the UME has taken part, notable because of their special features or impact, are discussed below.

Environmental Operation "Extremadura 2018"

The proliferation of invasive species expanding into new habitats has become a serious environmental menace. A case in point is the common water hyacinth (*Eichhornia crassipes*), which in optimal conditions can double its biomass in around 12 days, interfering with water oxygenation and causing serious damage to biodiversity. Large quantities of this plant were discovered in the Guadiana River. Removal proved to be extremely difficult, and accordingly the UME joined the Guadiana River Basin Authority's task force on 9 October 2018 at the request of the Government of Extremadura.

For several months the UME deployed 120 troops and 70 items of equipment full time to remove plants from the 175 kilometres of affected river bed (Figure 4).

Figure 4. Operation Extremadura.
Source: UME website.

This operation was something new to the UME, which had to come up with innovative solutions to improve the efficiency of removal procedures. Monitoring the work performed and how the invasion progressed using geographic information systems turned out to be vitally important. By the time the operation ended in 2018, some 250,000 tonnes of water hyacinth had been removed from the river. Many more thousands of tonnes were removed on a second pass carried out in 2019, which succeeded in eradicating this invasive species.

Flooding in Murcia y Orihuela in 2019

Major flooding occurred in the Murcia Region and in Alicante, namely, Orihuela, as a result of heavy rains brought on by a cut-off low pressure system in September 2019. Both these Autonomous Regions experienced difficulties in rescuing large numbers of people who had been isolated and requested outside assistance, so the UME was again activated and deployed. In view of the extent of the damage and the adverse weather forecasts, the UME mobilised troops and equipment from all of its units and called on the Army, Air Force, and Navy for further assistance. In all, more than 1,100 service members were deployed.

Two tactical groups designated "Murcia" and "Orihuela" were organised. They were composed of UME action groups and engineers, units of engineers from the Spanish Legion, boats from the Navy's diving unit, Military Police units from the Legion and the Navy, paratroopers from the Special Operations Command and III Airborne Squadron, BTUME drones, and an Army helicopter along with two more helicopters provided by the Air Force, some 300 pieces of equipment in all. The groups were mainly involved in rescuing people who had been stranded, in preventive evacuation, and in pumping out specific locations, such as Los Alcázares, San Pedro del Pinatar, Beniel, Santomera, and Siscar in Murcia and in the towns of La Vega Baja like Orihuela, Dolores, Redován, and Almoradí. Rescuing stranded people was

performed using all-terrain vehicles, boats, and helicopters (Figure 5). Certain areas could only be reached on foot.

The Armed Forces contingent had specialised equipment for dealing with floods, e.g., the UME's SIGEFLU system, capable of pumping 17,000 l/min to a distance of 4-5 km using pumps connected in series or 50,000 l/min to a distance of 1 km using pumps connected in parallel. The EMBAL mud pumping system capable of pumping 320 m^3/h was also used. The UME's and the Legion's equipment and engineers were essential for water containment and putting infrastructure back in service.

The complex nature of the operation and the need for reinforcements meant stationing BIEM V in Alcalá de Henares and BIEM IV in Valencia. The Armed Forces also kept various helicopters on alert for use in possible helicopter transport and search and rescue missions.

Figure 5. Flooding caused by a cut-off low pressure system in Alicante and Murcia.
Source: UME website.

Operations "BALMIS" and "BALUARTE"

The Armed Forces have been involved in combatting the COVID-19 emergency through operations "Balmis" and "Baluarte", the latter still in progress. Both these operations entailed providing support for Government action in the current health crisis. The UME, along with the Army, Air Force, and Navy, were placed at the disposal of the Defence Staff Operations Command.

Operation "BALMIS" was the Armed Forces' initial response at the outbreak of the pandemic. This mission lasted 98 days and involved 188,173 service personnel measured in troops per day, 45,414 corresponding to the UME. A total of 5,301 retirement homes were disinfected (Figure 6), 3,828 by the UME, along with 12,410 other premises, hospitals, and health care and social facilities (7,048 by the UME). Other actions were also taken, such as reconnaissance and security support tasks, setting up camps, logistics support, transport of the ill and the deceased, disinfection training for Civil Defence teams, and PCR diagnostic analyses by the Rapid Response Laboratory (LABIR) – see the section on the Environmental and Technology Emergency Response Group (GIETMA). The latter made it possible to test members of the Armed Forces deployed on the various international missions in which Spain is participating, for COVID-19.

After this mission, the Ministry of Defence offered the regional governments support by contact tracers to locate people who had been in contact with infected persons to curb uncontrolled spread of the virus. The UME was the first unit activated for this task and had to design a methodology and procedure to be able to complete this mission. The Armed Forces subsequently made personnel available to provide support to train training staff. This task, together with the task of disinfecting priority facilities, has given rise to Operation "Baluarte".

In order to achieve the best outcome in the fight against COVID-19, R&D initiatives have been carried out with the support of engaged Spanish companies, e.g., for adapting and developing backpack fire extinguishers for use in disinfection, electrostatic sprayers, fumigation drones, remote controlled UV lamps, disinfection engines, and full face mask 3D printing.

Figure 6. COVID-19 support deployment. Operation BALMIS.
Source: UME website.

Winter Storm Filomena 2021

Storm Filomena hit the central portion of the Iberian Peninsula in early January of this year, bringing such major cities as Madrid to a standstill, closing the Adolfo Suárez Madrid-Barajas Airport, the Atocha Train Station, and the Mercamadrid Central Food Market and more, and making such essential facilities as hospitals and health care clinics impossible to reach. The severity of the situation resulted in immediate response by the UME with the support of the Army (ET). The response was not compromised, because UME units had been moved into pre-assigned staging positions based on weather forecasts, BIEM V to Segovia and BIEM I to Albacete. All UME units were placed on alert for possible call-up to active status.

The mission lasted 15 days, from 7 to 21 January, and was concentrated mainly in the provinces of Albacete, Toledo, Madrid (Figure 7), Guadalajara, Zaragoza, and Teruel. A series of independent operations were organised based on the areas concerned, namely, "YESTE", "MADRID", "BARAJAS", "ARAGÓN", "TOLEDO", and "GUADALAJARA". Assigned missions were mainly ploughing out ring roads, highways, streets, runways, parking areas, and access ways to hospitals, pharmacies, logistics centres, and food distribution centres; transporting sick people and key personnel, and checking on towns that had been cut off.

By way of example, on 13 January there were 488 UME troops and 396 Army troops with 289 vehicles at work in Madrid; 202 Army troops and 22 vehicles in Toledo; 220 UME troops and 86 vehicles in Aragón; 94 UME troops and 88 Army troops operating 67 vehicles at Barajas; and 135 Army troops and 31 vehicles in Guadalajara.

Figure 7. Deployment for winter storm Filomena in Madrid.
Source: UME website.

Foreign Operations

Actions by the UME outside Spain may spring from bilateral agreements between Spain and other countries as part of the European Union's civil protection mechanism, from supporting UN humanitarian assistance, or from participating in military emergency operations support under the command of NATO. Requests for help by the UME can be sent by different channels: to the Ministry of the Interior from the European Union's civil protection mechanism or the UN, to the Ministry of Foreign Affairs under bilateral agreements, or to the Ministry of Defence itself from NATO. The missions described below provide some examples.

"Ecuador Tactical Group"

On 16 April 2016 Ecuador suffered one of the most devastating earthquakes in its history. A magnitude 7.8 tremor caused grave damage to different cities and towns in the provinces of Esmeralda and Manabí. In these serious circumstances, international search and rescue teams deployed within 24 hours of the quake to assist in rescuing those still alive.

The Spanish government mobilised the UME and the Community of Madrid Immediate Response Team (ERICAM), the only two Spanish teams classified by INSARAG. An Air Force plane carrying 45 UME and 12 ERICAM personnel took off for Ecuador from Torrejón on 18 April. The main task of these teams was victim search and rescue, and they took with them six dogs, four for finding those still alive and two for finding bodies, plus telescopic cameras, geophones, and drones (Figure 8).

On arrival, on instructions from the UN, the Spanish teams first deployed to Canoa, where they worked with local teams in locating and recovering bodies from the wreckage using drilling and cutting tools.

Figure 8. Operation Ecuador, April 2016.
Source: UME website.

At the UN's request, they then went to Manta to survey an extensive area and confirm the presence or absence of bodies under the rubble and to check on the safety condition of buildings for recovery operations. This helped local teams to move on to the stage of clearing away the rubble using heavy machinery.

After its search and rescue mission, the contingent went to Chone to check on the condition of the region's main hospital, which had sustained structural damage. The Spanish teams assessed the condition of the building and marked off safe areas. They recovered 105 items of major medical equipment, such as x-ray machines, intensive care cribs, incubators, electrocardiograph machines, and electric hospital beds. The recovered equipment was valued at 1.2 million dollars, but at that point in time its functional value was incalculable because it was needed to attend to some 800 injured a day in the aftermath of the tragedy.

The next day the team was assigned the task of securing the Archaeological Museum of Bahía de Caráquez, designated a national cultural heritage site. It took two days to make the building safe by shoring and by repairing unsafe areas to prevent future collapses that could damage objects and works of great historical significance.

"Chile Tactical Group"

In January and February 2017 Chile suffered a wave of vast forest fires that resulted in a call for international assistance. Through its civil protection mechanism, the European Union sent teams from France, Portugal, and Spain. On 27 January 56 UME service personnel left for Santiago de Chile on an Air Force Airbus 310.

Together with the members of Chile's National Forest Corporation, Spanish service members fought the fire using line of defence tactics in the form of firebreaks created with chainsaws and hand implements.

It was the UME's first action fighting forest fires on the other side of the Atlantic and posed a deployment challenge.

Conclusions

The UME was formed as a specialised unit for emergencies to improve the national government's ability to deal with situations of that kind. The Armed Forces thus possess a specific instrument that helps enhance the safety and wellbeing of Spain's citizenry during catastrophic events, with the UME as the military's frontline instrument of response. It has made it possible to cut reaction times and has made available more specialised personnel and equipment. Even so, the Armed Forces as a whole still play a vital role in providing resources in complex or prolonged situations. The UME has been able to evolve and to adapt to changing times by developing new capacities and enhancing existing ones. Its operations are based on three linchpins: planning, a vantage point for contemplating an uncertain future in which disasters seem to be becoming increasingly frequent and severe; training, to prepare personnel to tackle enemies in the form of hazards; and deployment, placing it in the service of our country's citizens to mitigate the consequences of unwanted events.

At the present time the UME enjoys broad popularity in Spanish society, which has been able to appreciate the attributes that distinguish our service men and women, the outcome of a centuries' old code of ethics, the "Royal Regulations of the Armed Forces [*Las Reales Ordenanzas para las Fuerzas Armadas*]". Honour, discipline, courage, a spirit of sacrifice, and humility are traits that prepare Spanish soldiers to face the worst of all calamities: war.